

Design and Construction
of Two Elver Trap Nets

by

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Introduction

Upstream migration of glass-eels, elvers and juvenile eels has received little scientific study to date. Difficulty in accurately documenting quantity and timing of, and effects of environmental factors on, elusive elvers is partially responsible for this deficiency. Measurement of recruitment potential of eel populations is essential to calculations of the dynamics of the species in different areas. These measures, combined with population estimates and fishing effort, serve to outline pictures of future populations at various fishing efforts.

Studies on upstream migration of glass-eels were undertaken by the Nova Scotia Department of Fisheries in 1981. Elver trap nets of two types were designed and constructed to monitor movements of migrating elvers. Specifications for both designs are included in this report as well as a statement on the successes of each net.

Materials and Methods

Nylon netting of 17 kilo test and 1 mm mesh size was used for construction. Thread used was that employed in the making of spinnakers, and all materials were stitched using an industrial sewing machine. Nylon rope, 6 mm wide, was used at all points of attachment required to secure the net.

Construction of Static Elver Net

Pieces of netting were cut and assembled to fit net measurements given in Figure 1. The codend (also called a box trap) was constructed from a single piece of material, pictured doubled over in Figure 2. For more details on codend construction, please refer to dynamic net construction.

Construction of Dynamic Elver Net

The main face of the net was cut from a 6 m length of 2 m wide netting, as per Figure 3 specifications. The pattern for the codend is shown in Figure 4. The constructed codend, detailed in Figure 5, consisted of netting shaped by wooden frames and tied at the end. The cone (dark grey area in Figure 5c) was supported by guy lines to the interior corners of the net. Lines fixed to the main body of the net ran from the front of the box and extended beyond the net for 0.75 m, where they joined

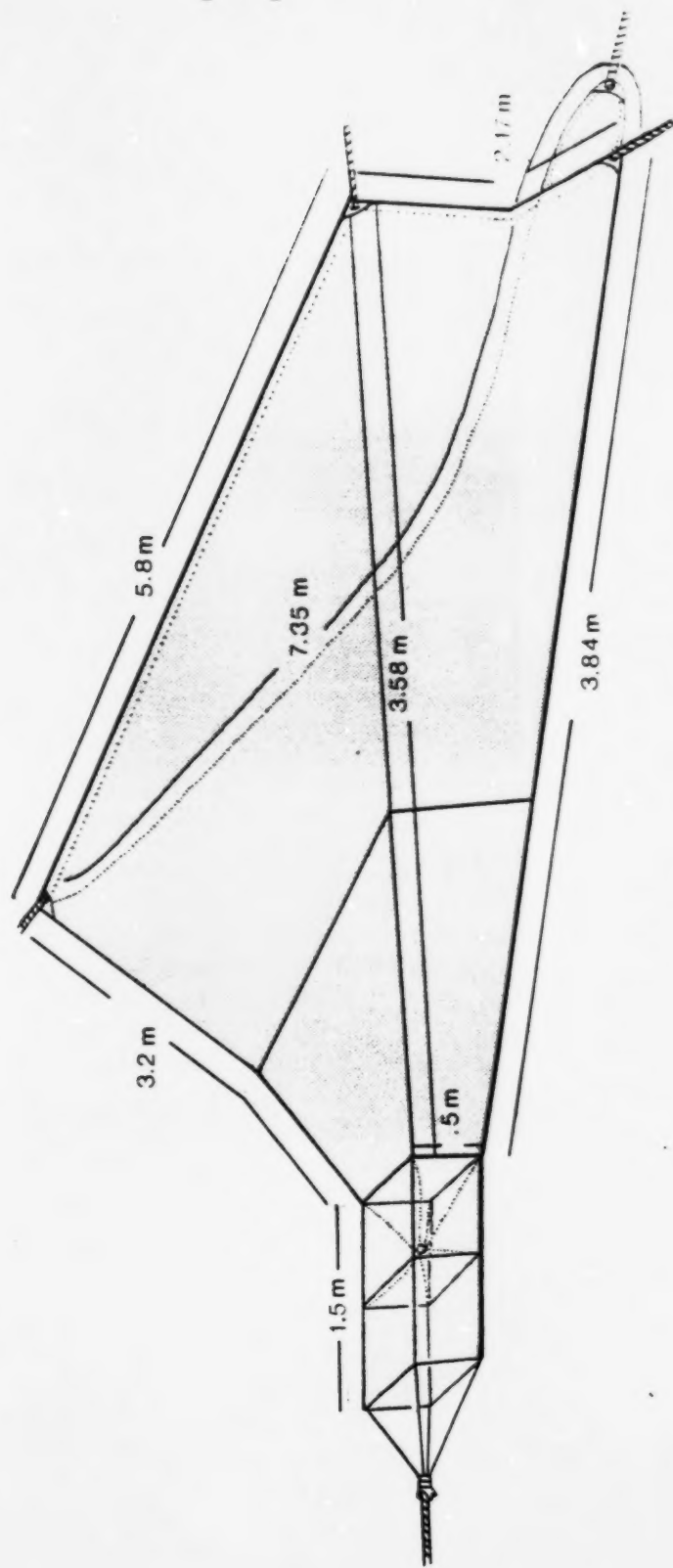


Figure 1 : Static Elver Trap
scale: 2 cm = 1 m

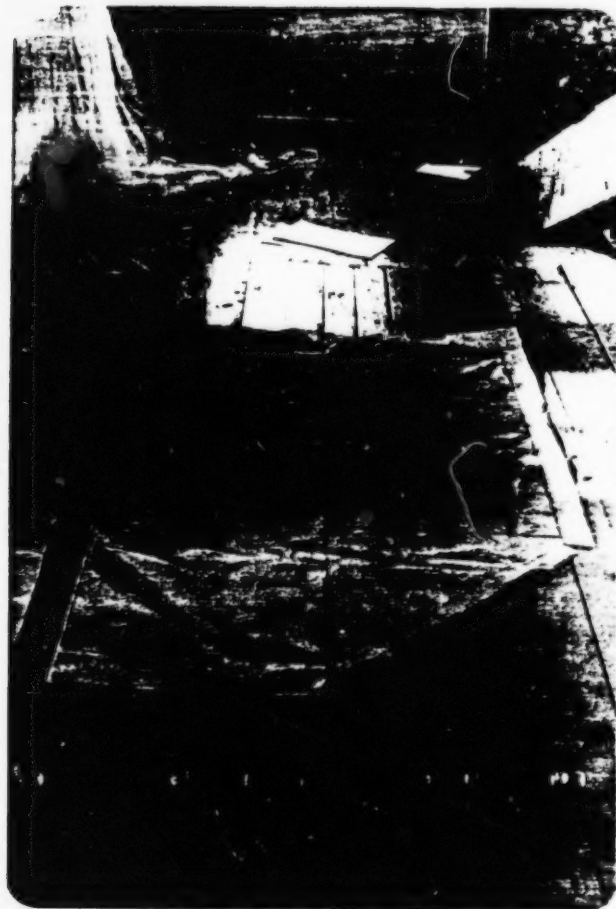


Figure 2: Pattern for codend doubled over.

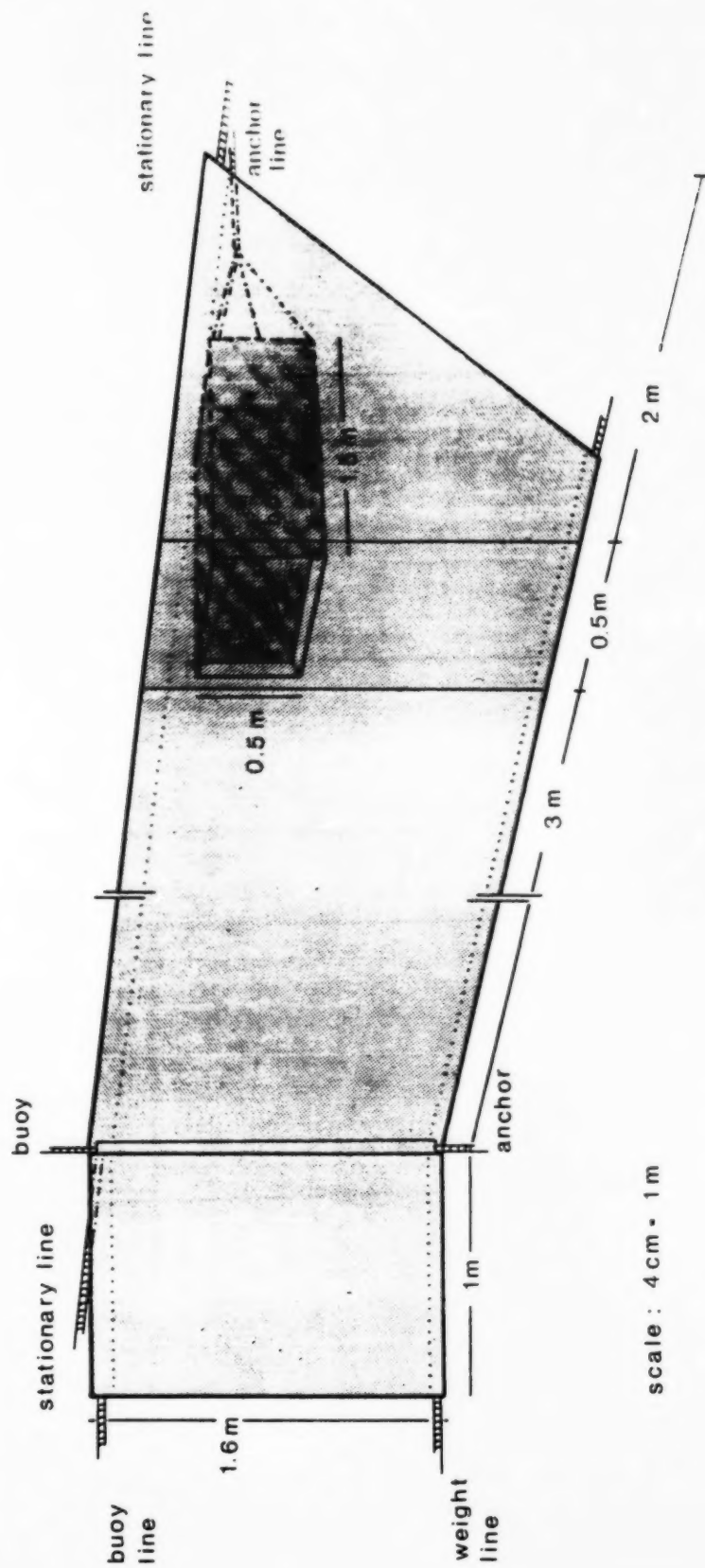


Figure 3: Dynamic Elver Trap Net

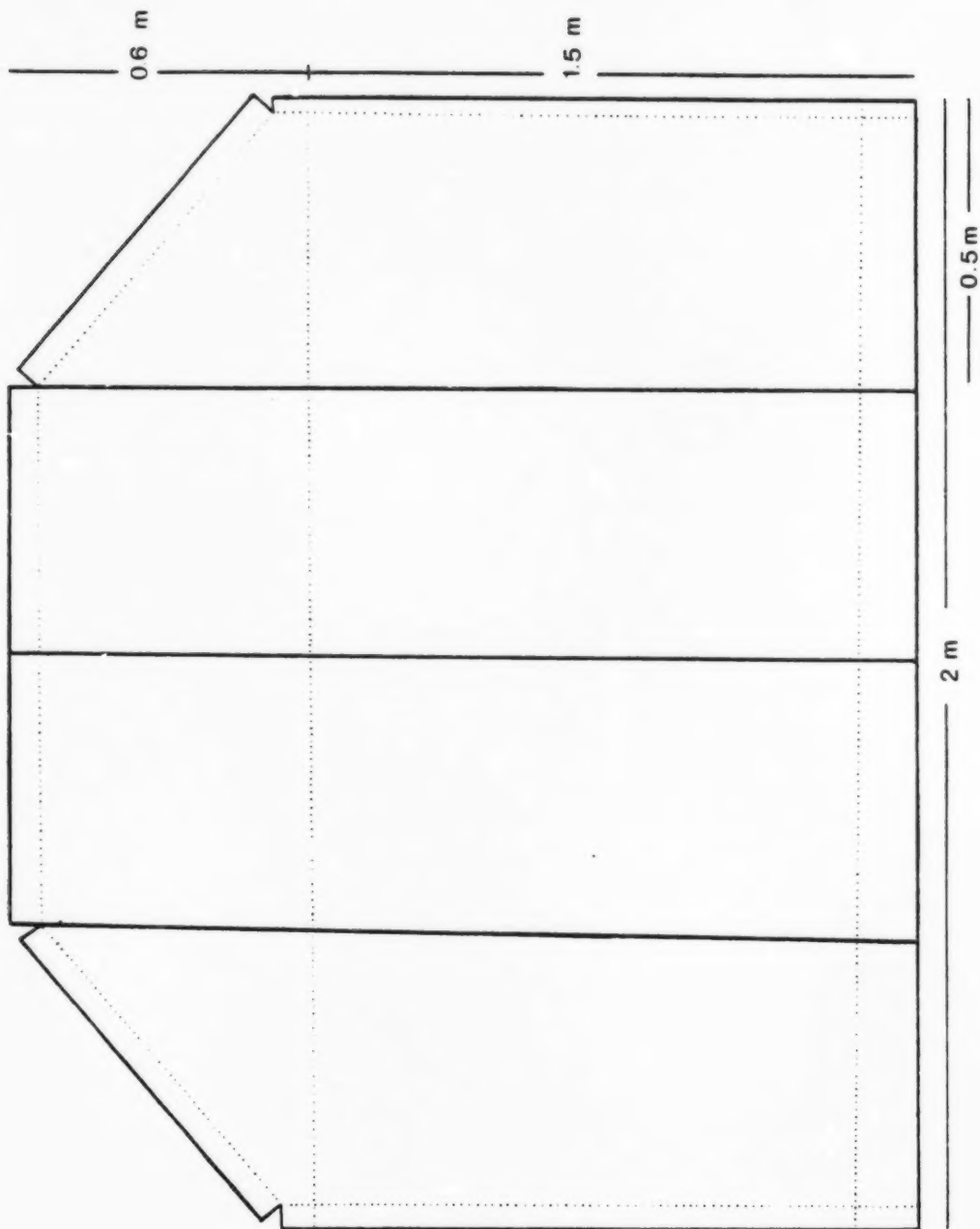
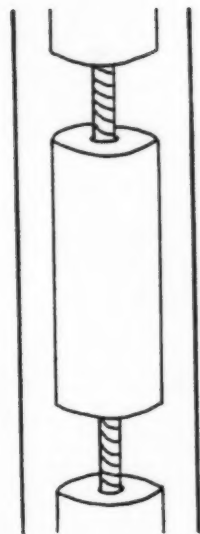


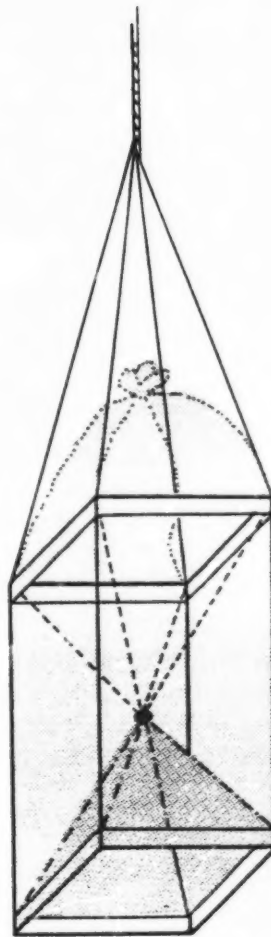
Figure 4 : Pattern for cod end of the Dynamic Elver Net



a: buoy line : 12 cm buoys on 6 mm line



b: weight line : 2.27 kg weights on lead weighted line



c: box trap

Figure 5 : Details of the Dynamic Elver Trap (figure 3). a: buoy line; b: weight line; c: box trap
(a & b : 7cm - 0.2m / c: 10cm - 1m)

into one line. Reinforcement of the main net with canvas at the insertion of the codend served to strengthen the attachment. A buoy line and a weight line served to keep the net in a vertical position, and are depicted in Figure 5.

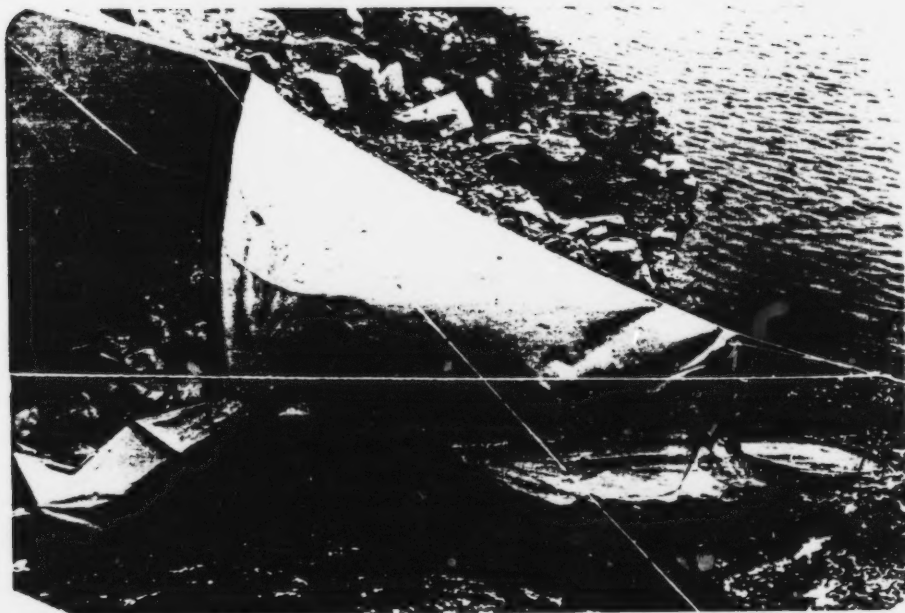
Discussion

Static Elver Net

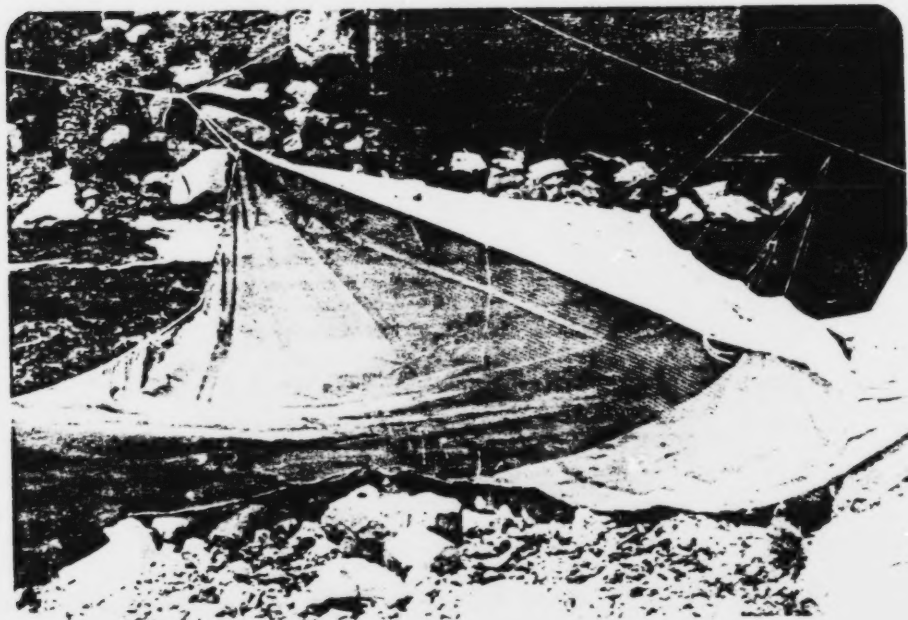
Named because of its position with respect to the river bottom, the static net may be set once and left over a period of time. Shown at low tide in Figures 6a and 6b, the static net was suspended from four major points: on the shallow bank, mid-river on the bottom, from the far side above the water line of the river, and at the codend. Secondary lines were suspended from midway back of the upper surface of the coned mouth to a point toward the codend. These lines ensured that the cone remained in shape during times of high water. Figure 6b also shows a wire mesh used to keep sea trout out of the net. They prey on the elvers whose presence was accented against the light colour of the netting. Figures 7a and 7b depict the net's position at high water.

Designed to collect information from one bank of a tidal waterway, the net accounted for a certain % of the migrating elvers (Hutchison, 1981), depending on its position with respect to the current and the width of the river. Emptying of the net was accomplished by flush-

Figure 9 : Static Elver Net at low tide.

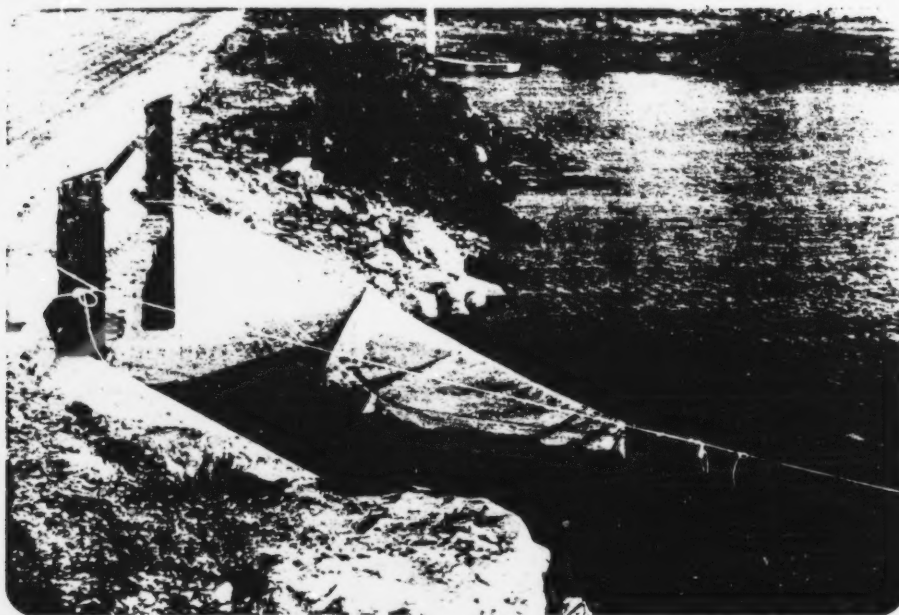


a: View of net from upstream looking down.

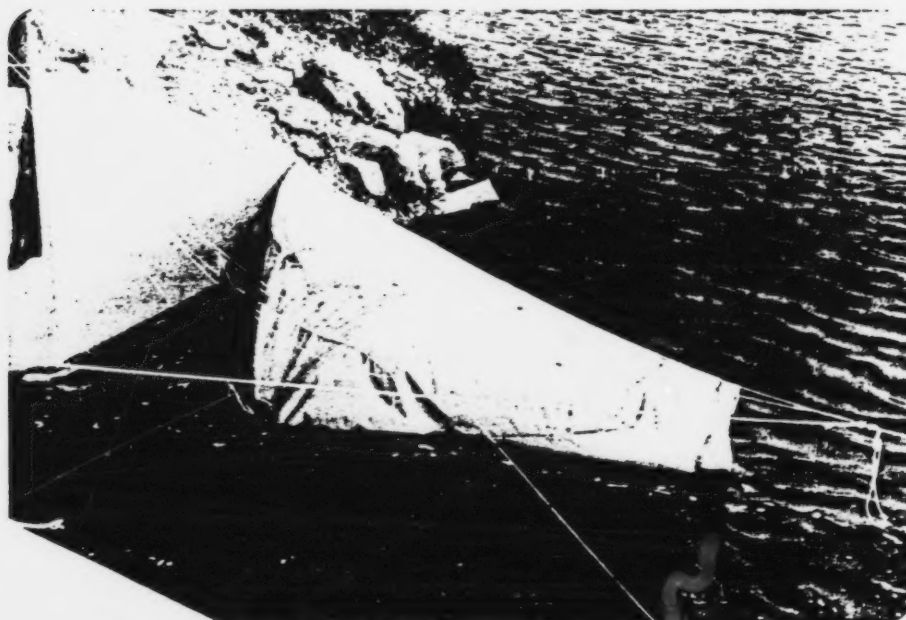


b: View of net from down stream. Note wire mesh over mouth of net to keep sea trout from preying on elvers in the net.

Figure 7 : Static Elver Net at high tide.



a: View of net from upstream.



b: Submerged codend visible.

ing the elvers, which had passed through a one way cone, out of the codend into a bucket. This design is very durable and has been tested over a two month period with few repairs being necessary.

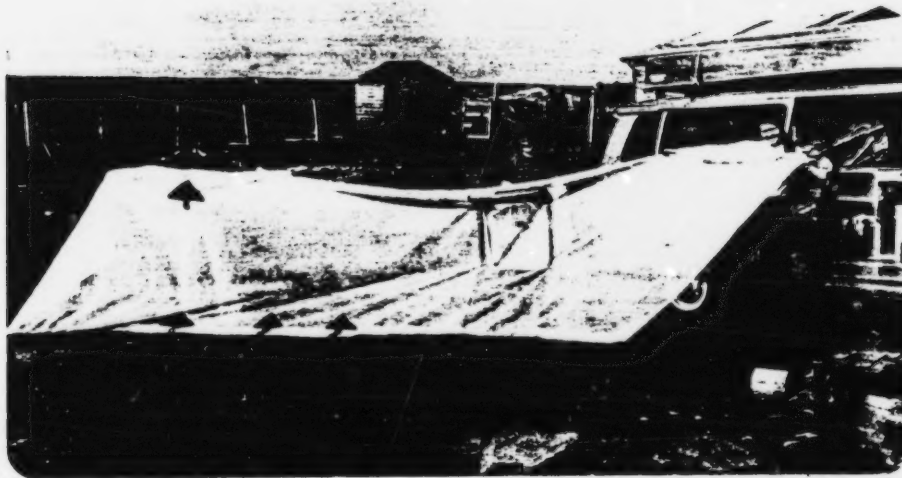
Dynamic Elver Net

Designed for placement in tidal areas, the dynamic elver net may be set mid-stream or close to a bank. It may be set in a linear fashion as outlined in Figures 8a and 8b. If the two ends are placed forward of the entrance to the codend, the net will take the form of a "v". In deep water it will remain in a vertical position and remain at the surface by buoy suspension, irrespective of the change in water depth. This net is intended for waters of less flow than the static net and is kept in place by line and anchor. Its effectiveness has yet to be tested over a long period, but occasional use has shown it to be functional.

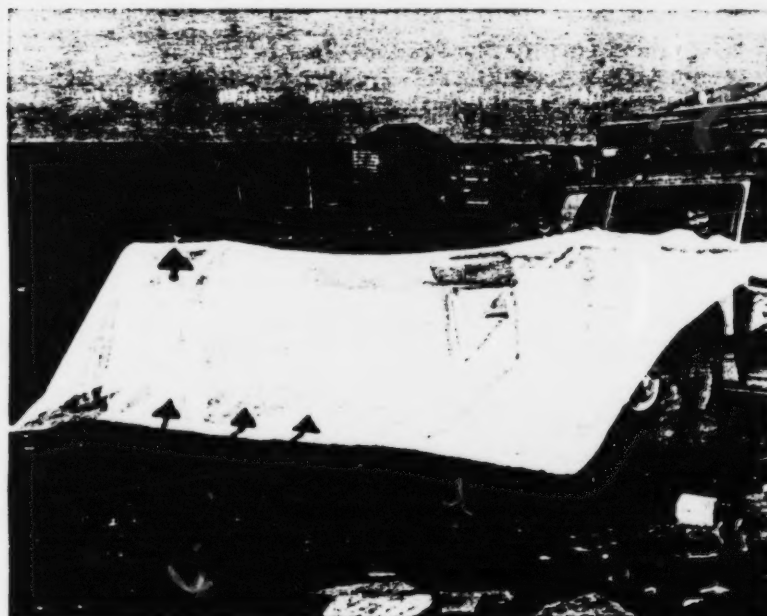
Closing Remarks

In short, the two nets described have been employed successfully in studies of migrating elvers. Flexibility and durability are combined in both systems. Together, they may be employed in almost any situation, and may serve as a basis for improvement and modification, depending on the needs of a given study.

Figure 8 : Dynamic Elver Net



a: net extended in linear fashion.



b: note extension of cod end behind the face of the main net.

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Bibliography

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